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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/888,890	06/25/2001	Patrick A. Harkin	4586US (00-0747)	1176

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EXAMINER	
CASCHERA, ANTONIO A	
ART UNIT	**PAPER NUMBER**
2676	

DATE MAILED: 01/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/888,890	HARKIN, PATRICK A.	
	Examiner	Art Unit	
	Antonio A Caschera	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36,41-52,54,55 and 57-81* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *35,36,41-52,54,55,57,58 and 69-81* is/are allowed.

6)☒ Claim(s) *1,2,5-10,13-20,23-29,32-34,59-66 and 68* is/are rejected.

7)☒ Claim(s) *3,4,11,12,21,22,30,31 and 67* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 2, 5-10, 13-20, 23-29, 32-34, 59-66 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Penna (U.S. Patent 6,222,556 B1) in view of Landau et al. (U.S. Patent 6,529,207 B1).

In reference to claims 1 and 9, Penna discloses an image processing method and apparatus for rendering images using polygons or primitives (see column 1, lines 4-8). Penna discloses sorting the three vertices in the vertical direction (y direction) such that there is a top, middle and bottom vertex (see column 4, lines 21-23 and Figure 2 of Penna). Penna further discloses the vertices obtained from polygons which form digital objects within an image (see column 1, lines 9-15). Penna then discloses generating a classification for the sorted polygon data based upon the positions of the vertices of the polygon and processing the polygon dependent upon such a classification (see column 4, lines 23-43). Penna further discloses the process of classifying the primitives as grouping them and placing them on rendering lists to be processed, each in a specific manner regarding the number of slope calculations needed to be performed (slope identifier) (see columns 5-6, lines 59-19 and #56, 58, 62 and 68 of Figure 2). Note the office interprets the slope identifier classification decision of Penna functionally

equivalent to applicant's orientation decision variable. Penna does not explicitly disclose calculating a cross product term of a polygon however Landau et al. does. Landau et al. discloses a system used to identify objects to apply anti-aliasing determining whether a first primitive edge is hidden by other primitive edges (see lines 1-6 and 15-19 of abstract). Landau et al. discloses implementing back-face culling by computing an area of a triangle by the cross-product of the x and y projections of the triangle sides (see columns 5-6, lines 67-3). Landau et al. does not explicitly disclose calculating the cross-product term after having sorted the polygon data however it would have been obvious to one of ordinary skill in the art at the time the invention was made to sort the data before computing a cross-product term on the data in order to ensure the order of processing and polygon data remain constant making certain cross-product calculations yield correct signed data, which would lead to a correct determination of whether the polygon needs to be culled (see *Response to Arguments* below). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the image vertex sorting and processing methods and apparatus of Penna with the back-face culling system of Landau et al. in order to reduce the overall amount of computation by conserving processing cycles on unseen objects of the display (see column 5, lines 8-28 and 56-65 of Landau et al.).

In reference to claims 2 and 10, Penna and Landau et al. disclose all of the claim limitations as applied to claims 1 and 9 respectively above in addition, Landau et al. discloses determining the sign of the cross-product calculation (see column 6, lines 3-11).

In reference to claims 5, 13, 23 and 32, Penna and Landau et al. disclose all of the claim limitations as applied to claims 1, 9, 17 and 26 respectively. Landau et al. discloses using the cross-product calculation to determine the direction of rendering of the triangle or whether the

triangle should be culled (see column 6, lines 3-27). Note the office interprets the determining of whether the triangle should or should not be culled to be equivalent to an appearance characteristic as claimed by the applicant as one characteristic of an image is whether it is visible or not.

In reference to claims 6 and 14, Penna and Landau et al. disclose all of the claim limitations as applied to claims 1 and 9 respectively above. Penna discloses sorting the three vertices in the vertical direction (y direction) such that there is a top, middle and bottom vertex (see column 4, lines 21-23 and Figure 2 of Penna). Penna also discloses generating a classification for the sorted polygon data based upon the positions of the vertices of the polygon and processing the polygon dependent upon such a classification (see column 4, lines 23-43). Note, the office interprets that the sorting and classifying/generating identifier lists of Penna occur, "substantially concurrently" as the above processing of Penna is performed by a CPU (see column 3, lines 45-50) which is known to perform processing steps at a very fast rate. Since the term, "substantially concurrently" is a broad term, the office interprets the "very fast rate" of sorting and classifying/generating equivalent to processing the steps, "substantially concurrently."

In reference to claims 7 and 15, Penna and Landau et al. disclose all of the claim limitations as applied to claims 1 and 9 respectively above. Penna then discloses generating a classification for the sorted polygon data based upon the positions of the vertices of the polygon and processing the polygon dependent upon such a classification (see column 4, lines 23-43). Penna further discloses the process of classifying the primitives as grouping them and placing them on rendering lists to be processed, each in a specific manner regarding the number of slope

calculations needed to be performed (slope identifier) (see columns 5-6, lines 59-19 and #56, 58, 62 and 68 of Figure 2). Note the office interprets the slope identifier classification decision of Penna functionally equivalent to applicant's orientation decision variable.

In reference to claims 8 and 16, Penna and Landau et al. disclose all of the claim limitations as applied to claims 7 and 15 respectively above in addition, Landau et al. discloses setting an orientation flag indicating the direction of a polygon, determined from the sign of a cross-product calculation and an actual orientation of the polygon (see column 6, lines 3-27).

In reference to claims 17 and 26, Penna discloses an image processing method and apparatus for rendering images using polygons or primitives (see column 1, lines 4-8). Penna discloses the image processing apparatus including a CPU (see Figure 1), sorting the three vertices in the vertical direction (y direction) such that there is a top, middle and bottom vertex (see column 4, lines 21-23 and Figure 2 of Penna). Penna further discloses the vertices obtained from polygons which form digital objects within an image (see column 1, lines 9-15). Penna then discloses generating a classification for the sorted polygon data based upon the positions of the vertices of the polygon and processing the polygon dependent upon such a classification (see column 4, lines 23-43). Penna further discloses the process of classifying the primitives as grouping them and placing them on rendering lists to be processed, each in a specific manner regarding the number of slope calculations needed to be performed (slope identifier) (see columns 5-6, lines 59-19 and #56, 58, 62 and 68 of Figure 2). Note the office interprets the slope identifier classification decision of Penna functionally equivalent to applicant's orientation decision variable. Note, the office interprets the image processing apparatus, comprising of a CPU and other circuitry (see column 3, lines 45-67 and Figure 1) functionally equivalent to

applicant's first and second logic circuits as the circuitry of Penna provides the same functionality as applicant's circuitry. Penna does not explicitly disclose calculating a cross product term of a polygon however Landau et al. does. Landau et al. discloses a system used to identify objects to apply anti-aliasing determining whether a first primitive edge is hidden by other primitive edges (see lines 1-6 and 15-19 of abstract). Landau et al. discloses the back-face culling determination, which includes the cross-product calculation, to be executed by a culling module (see column 8, lines 47-50 and #164 of Figure 12). Landau et al. discloses implementing back-face culling by computing an area of a triangle by the cross-product of the x and y projections of the triangle sides (see columns 5-6, lines 67-3). Landau et al. does not explicitly disclose calculating the cross-product term after having sorted the polygon data however it would have been obvious to one of ordinary skill in the art at the time the invention was made to sort the data before computing a cross-product term on the data in order to ensure the order of processing and polygon data remain constant making certain cross-product calculations yield correct signed data, which would lead to a correct determination of whether the polygon needs to be culled (see *Response to Arguments* below). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the image vertex sorting and processing methods and apparatus of Penna with the back-face culling system of Landau et al. in order to reduce the overall amount of computation by conserving processing cycles on unseen objects of the display (see column 5, lines 8-28 and 56-65 of Landau et al.).

In reference to claims 18 and 27, Penna and Landau et al. disclose all of the claim limitations as applied to claims 17 and 26 respectively above in addition, Penna discloses the CPU under the control of instructions fed from an off-line data store (see column 3, lines 50-60)

which the office interprets equivalent to the, "back face culling application" of applicant's claims. Landau et al. discloses the culling module being under the control of a graphics rendering system which performs back-face culling (see column 5, lines 56-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the image vertex sorting and processing methods and apparatus of Penna with the back-face culling system of Landau et al. in order to reduce the amount of computation by conserving processing cycles on unseen objects of the display (see column 5, lines 8-28 and 56-65 of Landau et al.).

In reference to claims 19 and 28, Penna and Landau et al. disclose all of the claim limitations as applied to claims 17 and 26 respectively above. Penna discloses the image processing apparatus including a CPU (see Figure 1), sorting the three vertices in the vertical direction (y direction) such that there is a top, middle and bottom vertex (see column 4, lines 21-23 and Figure 2 of Penna).

In reference to claims 20 and 29, Penna and Landau et al. disclose all of the claim limitations as applied to claims 17 and 26 respectively above. Although Landau et al. discloses the third logic block, the culling module, to determine back-face culled triangles which includes determining the sign of the cross-product term (see columns 5-6, lines 67-27 and column 8, lines 25-28), neither Penna nor Landau et al. explicitly disclose a fourth logic block determining the sign of the cross-product term however, the office sees such a limitation as a matter of design choice as preferred by the designer. Further, creating a separate logic block to determine the sign of the cross-product calculation instead of incorporating the sign determination in the third logic

block (cross-product calculation) provides no immediate criticality to the system when viewing it as a whole.

In reference to claims 24 and 33, Penna and Landau et al. disclose all of the claim limitations as applied to claims 17 and 26 respectively above. Claims 24 and 33 are equivalent in scope to claim 6 and therefore are rejected under equivalent rationale.

In reference to claims 25 and 34, Penna and Landau et al. disclose all of the claim limitations as applied to claims 17 and 26 respectively above. Neither Penna nor Landau et al. explicitly disclose the first and second logic circuits to comprise the same logic circuit however, the office sees such a limitation as a matter of design choice as preferred by the designer. Further, the exact configuration of hardware within the system provides no immediate criticality towards the system as it is view as a whole. Also, it is well known in the art to incorporate several logic blocks together on a single chip, for example, to same physical space for other hardware.

In reference to claim 59, Penna discloses an image processing method and apparatus for rendering images using polygons or primitives (see column 1, lines 4-8). Penna discloses sorting the three vertices in the vertical direction (y direction) such that there is a top, middle and bottom vertex (see column 4, lines 21-23 and Figure 2 of Penna). Penna further discloses the vertices obtained from polygons which form digital objects within an image (see column 1, lines 9-15). Penna then discloses generating a classification for the sorted polygon data based upon the positions of the vertices of the polygon and processing the polygon dependent upon such a classification (see column 4, lines 23-43). Penna further discloses the process of classifying the primitives as grouping them and placing them on rendering lists to be processed, each in a

specific manner regarding the number of slope calculations needed to be performed (slope identifier) (see columns 5-6, lines 59-19 and #56, 58, 62 and 68 of Figure 2). Note the office interprets the above classification decision of Penna functionally equivalent to the "determining an orientation..." of applicant's claims. Penna does not explicitly disclose determining if an orientation of the vertices of a polygon has changed from an actual orientation however Landau et al. does. Landau et al. discloses a system used to identify objects to apply anti-aliasing determining whether a first primitive edge is hidden by other primitive edges (see lines 1-6 and 15-19 of abstract). Landau et al. discloses determining whether an orientation of a triangle has changed and therefore, is different than an actual orientation compared to the sign of a cross product term (see columns 5-6, lines 67-17). Landau et al. discloses implementing back-face culling by computing an area of a triangle by the cross-product of the x and y projections of the triangle sides (see columns 5-6, lines 67-3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the image vertex sorting and processing methods and apparatus of Penna with the back-face culling system of Landau et al. in order to reduce the amount of computation by conserving processing cycles on unseen objects of the display (see column 5, lines 8-28 and 56-65 of Landau et al.).

In reference to claim 60, Penna and Landau et al. disclose all of the claim limitations as applied to claim 59 above. Landau et al. discloses determining whether a polygon is back-face culled by evaluating the orientation (clockwise or counterclockwise) of the polygon to an actual orientation of the polygon (see columns 5-6, 67-27).

In reference to claim 61, Penna and Landau et al. disclose all of the claim limitations as applied to claim 60 above. Landau et al. discloses determining whether a polygon is back-face

culled by evaluating the orientation (clockwise or counterclockwise) of the polygon to an actual orientation of the polygon to see if they indicate a common or opposite orientation (see columns 5-6, 67-27).

In reference to claims 62 and 63, Penna and Landau et al. disclose all of the claim limitations as applied to claim 61 above. Penna discloses sorting the three vertices in the vertical direction (y direction) such that there is a top, middle and bottom vertex (see column 4, lines 21-23 and Figure 2 of Penna).

In reference to claim 64, Penna and Landau et al. disclose all of the claim limitations as applied to claim 59 above. Penna then discloses generating a classification for the sorted polygon data based upon the positions of the vertices of the polygon and processing the polygon dependent upon such a classification (see column 4, lines 23-43). Penna further discloses the process of classifying the primitives as grouping them and placing them on rendering lists to be processed, each in a specific manner regarding the number of slope calculations needed to be performed (slope identifier) (see columns 5-6, lines 59-19 and #56, 58, 62 and 68 of Figure 2). Note the office interprets the slope identifier classification decision of Penna functionally equivalent to applicant's orientation decision variable.

In reference to claim 65, Penna and Landau et al. disclose all of the claim limitations as applied to claim 64 above. Neither Penna nor Landau et al. explicitly disclose calculating a cross-product term based on the sorted polygon data however it would have been obvious to one of ordinary skill in the art at the time the invention was made to base the cross-product calculation upon sorted data in order to ensure the yield of the calculation represents an accurate

orientation of the polygon vertices to be decided for culling since the determination of whether to cull is based, in part, upon the sign of the cross-product calculation.

In reference to claim 66, Penna and Landau et al. disclose all of the claim limitations as applied to claim 65 above. Claim 66 is equivalent in scope to claim 2 and therefore is rejected under equivalent rationale.

In reference to claim 68, Penna and Landau et al. disclose all of the claim limitations as applied to claim 59 above. Claim 68 is equivalent in scope to claim 5 and therefore is rejected under equivalent rationale.

Response to Arguments

2. The cancellation of claims 37-40, 53, 56 and the addition of claims 69-81 is noted. Applicant's arguments, see pages 14-23, filed 7/26/2004, with respect to the rejection(s)of claim(s) 1-34, 49, 50, 53-55 and 57 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Penna and Landau et al., applied to claims 1, 2, 5-10, 13-20, 23-29, 32-34, 59-66 and 68..

3. Applicant's arguments, see pages 23-27, filed 7/26/2004, with respect to claims 35-38, 40-47, 51 and 52 have been fully considered and are persuasive. The rejection of claims 35-38, 40-47, 51 and 52 and has been withdrawn. Further note, limitations from now cancelled claims have been rewritten into independent claim 35 thus making claim 35 and any claims that dependent upon claim 35, allowable.

4. Applicant's arguments filed 7/26/2004 have been fully considered but they are not persuasive.

In reference to Applicant's Remarks, see pages 18-19, last paragraph through first paragraph on page 19, Applicant argues that before the filing data of the application, "...one of ordinary skill in the art would not have been motivated to sort data of at least three vertices of each polygon of a digital image prior to calculating the cross product term of that polygon..." (see pages 18-19 of Applicant's Remarks). The office disagrees and refers to previously introduced art of record Harris et al. (U.S. Patent 6,304,265 B1). Note, the office provides the Harris et al. reference in order to support its obvious statement made in the above rejections of claims 1, 9, 17 and 26. Harris et al. is directed to a method and apparatus for distinguishing between front facing and back facing polygons in computer graphics environments (see lines 1-3 of abstract). Harris et al. explicitly explains the process of determining front and back facing polygons in which he describes a possibility of clipping the polygon if the sign of a coordinate of a vertex of a polygon is negative. Harris et al. further explains that if none of the vertices of a polygon are positive, then the entire polygon would be clipped out and not need further computations to be performed (see column 9, lines 45-61). Clearly, the Harris et al. reference (who has a filing date of January 30, 1998, earlier than the present applicant's filing date) provides the motivation of sorting or organizing vertices of triangles before determining whether a polygon is front or back facing in order to discover and exclude those vertices and possibly entire polygons, which are not in the viewable area of display, thereby conserving valuable processing cycles on the data as no further computations would be needed upon such data. Sorting this data beforehand improves a graphics system's overall functionality as processing

cycles would be conserved and the system made more efficient. Therefore, the office firmly believes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to sort vertex data before calculating terms to determine back or front facing polygons.

Allowable Subject Matter

5. Claims 35, 36, 41-52, 54, 55, 57-58 and 69-81 are allowed.

In reference to claim 35, the prior art of record (Penna (U.S. Patent 6,222,556 B1), Takeda et al. (U.S. Patent 5,748,198), Landau et al. (U.S. Patent 6,529,207 B1) and Baltaretu et al. (U.S. Patent 6,437,780 B1)) does not explicitly disclose changing the sign of a cross-product term if the sign does not correspond to an actual orientation of a corresponding polygon, in combination with further claim limitations of claim 35.

In reference to claims 36 and 41-48, claims 36 and 41-48 are dependent upon allowable claim 35 and are therefore also deemed allowable.

In reference to claim 49, the prior art of record (Penna (U.S. Patent 6,222,556 B1), Takeda et al. (U.S. Patent 5,748,198), Landau et al. (U.S. Patent 6,529,207 B1) and Baltaretu et al. (U.S. Patent 6,437,780 B1)) does not explicitly disclose considering the orientation decision variable in determining whether the polygon is front facing or back facing based at least in part on an actual orientation of at least three vertices of the polygon, a sign of said cross product term and a sorted order of said at least the three vertices, in combination with the further limitations of claim 49. Note, previously indicated allowable subject has been included in claim 49 now making it allowable.

In reference to claims 50-52, 54, 55 and 57-58, claims 50-52, 54, 55 and 57-58 are dependent upon allowable claim 49 and are therefore also deemed allowable.

In reference to claim 69, the prior art of record (Penna (U.S. Patent 6,222,556 B1), Takeda et al. (U.S. Patent 5,748,198), Landau et al. (U.S. Patent 6,529,207 B1) and Baltaretu et al. (U.S. Patent 6,437,780 B1)) does not explicitly disclose determining positional difference between adjacent vertices of each polygon following sorting the vertices and then determining a cross product term for each polygon from said positional differences, in combination with the further limitations of claim 69.

In reference to claims 70-81, claims 70-81 are dependent upon allowable claim 69 and are therefore also deemed allowable.

6. Claims 3, 4, 11, 12, 21, 22, 30, 31 and 67 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In reference to claims 3 and 11, the prior art of record (Penna (U.S. Patent 6,222,556 B1), Takeda et al. (U.S. Patent 5,748,198), Landau et al. (U.S. Patent 6,529,207 B1) and Baltaretu et al. (U.S. Patent 6,437,780 B1)) does not explicitly disclose evaluating a sign of the cross product term and the orientation variable to determine whether to cull the data prior to rendering an image of at least a portion of the digital object.

In reference to claims 21 and 30, the prior art of record (Penna (U.S. Patent 6,222,556 B1), Takeda et al. (U.S. Patent 5,748,198), Landau et al. (U.S. Patent 6,529,207 B1) and Baltaretu et al. (U.S. Patent 6,437,780 B1)) does not explicitly disclose determining the

orientation of at least one polygon based on the sign of the cross produce term and the orientation decision variable.

In reference to claims 4, 12, 22 and 31, claims 4, 12, 22 and 31 depend upon objected to claims 3, 11, 21 and 30 and are therefore also objected to.

In reference to claim 67, the prior art of record (Penna (U.S. Patent 6,222,556 B1), Takeda et al. (U.S. Patent 5,748,198), Landau et al. (U.S. Patent 6,529,207 B1) and Baltaretu et al. (U.S. Patent 6,437,780 B1)) does not explicitly disclose determining whether a polygon's orientation has changed evaluating the sign of a cross-product calculation and an orientation decision variable.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (703) 305-1391. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached at (703)-308-6829.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

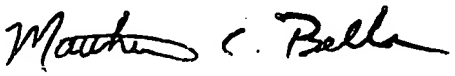
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
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aac

12/14/04